SINHA
THERMAL ENERGY
THERMAL ENERGY SOLUTION

We Provide Thermal Energy Storage solutions

SINHA THERMAL ENERGY PVT LTD
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1. SINHA THERMAL ENERGY

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We are In

Material Science

Research & Development

Green Technology

Product Development

Product Customization

Export

About Us

- Sinha Thermal Energy is a material science area start-up company that is working in the research and development of thermal energy storing chemicals like phase change material.
  .

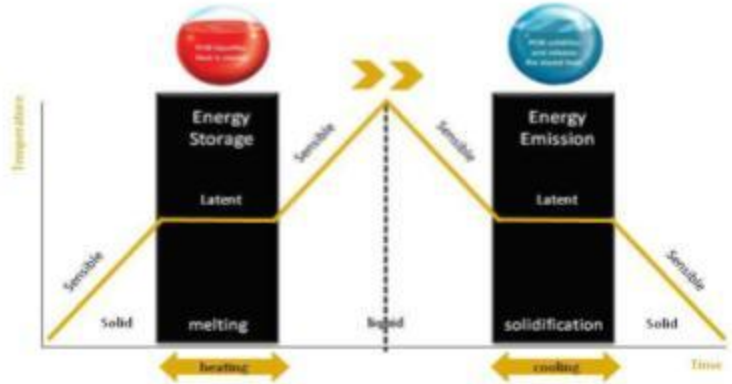
  We work with businesses and entrepreneurs that are working in the area of Healthcare ,life science ,pharmaceuticals ,e-commerce ,processes food and agriculture,floriculture etc.

- We continuously do research to improve our innovative temperature control solutions that aims to help temperature control transport of perishable like raw food products , processed food products , vaccines, thermolabile drugs,injections,bio-technological products etc.

- We provide phase change material (pcm) commonly called gel packs of diverse temperature ranges from ambient,chill,frozen as well as warm to hot.

Phase Change Material

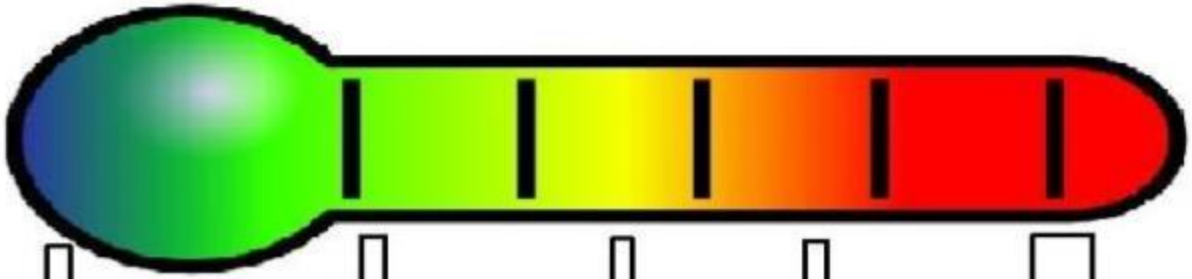
- Phase change materials (PCMs) are substances that absorb or release significant amounts of energy as latent heat during a phase transition, like melting or solidifying.Thus (PCMs) maintain temperature of the Products in their contact via conduction.



PHASE CHANGE MATERIAL –HOW IT WORKS ?

- Our phase change phase material works based on the principle of conduction of thermal energy where the object in contact acquires the temperature of gel pack or phase phase change material In contact through the principle of conduction of thermal energy.
- The phase change material has thermal energy stored in its latent heat during its transition from solid to liquid phase conducts cold energy at a constant temperature thus maintaining the temperature of object in contact , the same process works to maintain the hot temperature of the object , where phase change material transition from liquid to solid , where it emits hot energy .

PCM Temperature Scales



e.g.:- -7 °C to -30 °C. Ice,cream, meat,other frozen products.

Chill Temperature e.g. :- 0 °C to -5 °C . Meat, sea-food and fish .

Chill Temeperature .e.g. :- 2°C to 8°C. Pharmaceuticals, Yogurt,Milk and Fruits.

Ambient temperature .e.g :-22°C to 25°C. Chocolate,vegetables,mushroom, personal care,body vest etc.

Hot temperature .e.g. :- 50°C to 70 °C. Space Heating, Maintaining Temperature of hot food , Space heating etc.

Hot Temperature. e.g:- 70°C and above. Waste heat recovey, storing thermal energy etc.

PCM Encapsulation Flexible Pouch

HDPE Panel Encapsulation

8 inch X 3.5 inch X 1 inch

8.5 inch X 5.6 inch X 1 inch

10.5 inch X 5.7 inch X 1 inch

PCM in Drum


SINHA THERMAL
ENERGY PVT LTD
PHASE CHANGE
MATERIAL
MIX WELL BEFORE USE

PCM Encapsulation

- Our Multi-layer Flexible PCM Pouches have PET lamination that ensures leakage prevention,strength ,durability,thermal stability,chemical compatibility.

- These multi-layer encapsulation give the Outstanding Performance in various fields like the transportation of pharmaceuticals,food and also as a temperature back-up for the deep-freezer,refrigerator,ice-box etc.

- These pouches are made to use for 25 years.

PCM In Cold Chain

- Cold chain food, pharmaceuticals and Products like ice-cream, cheese,sweets,fruit juice , processed foods , vaccine, injections, cold chain medicine etc. needs cold temperature during storage and transport .

- Sinha thermal Energy manufactured Phase Change Material (PCM) provides solutions to this Problem.

- Sinha thermal Energy Phase Change(PCM) Material for cold chain ranges from +5 °C to -33°C.

Cold Chain Products

Sinha Thermal Energy PCM Benefits in Cold Chain

- Reduces Risks of Spoilage and Product Damage.
- Saves upto 40% Time
- Saves upto 50% Energy

Space Heating

- PCM are used for space heating for to warm up the room and to maintain the temperatures of food dryer .

- Sinha Thermal energy is manufacturing many PCM for space heating and drying applications. Sinha Thermal energy ™ OM-60P,
- Sinha Thermal energy ™ OM-50P, Sinha Thermal energy ™ OM-68P, Sinha Thermal energy ™ IHS-89P .

- These PCM can maintain the desired temperature by if applied in right amount and Way.

Phase change material —Heating Pad

- The phase change material absorb “Heat energy” from environment in day time or from incubator and become liquid and whenever temperature falls down it absorb cold energy and start becoming solid,and in this way,it regulate the temperature.
- Used in Greenhouses ,egg incubation,water heater etc.

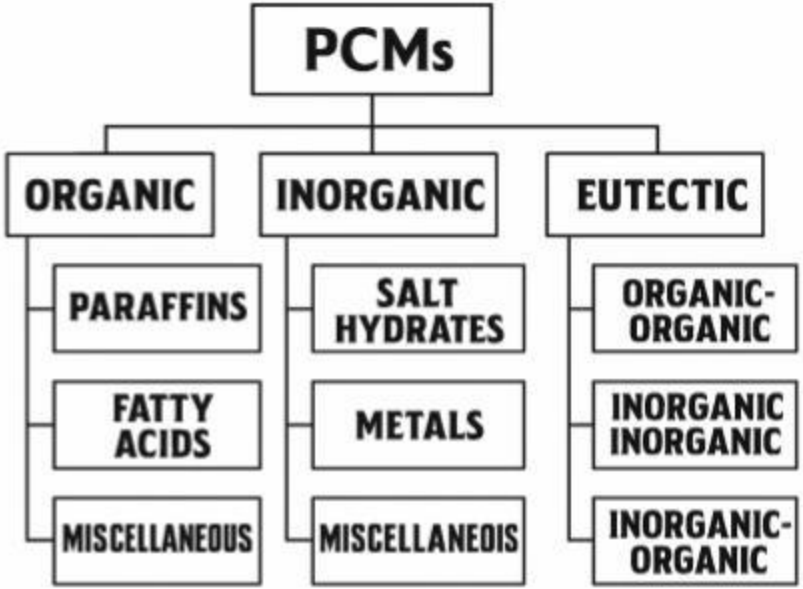
S.No.	Products	Temperature Range	Suitable Products
1.	Common Pharma Products ,F &V products, bakery products , dairy products	2°C to 8°C	Sinha Thermal energy ™ Ice gel Pack or 0°C PCM. E.g:- IHS-0
2.	Chocolate Products	2°C to 8°C	Sinha Thermal energy ™ Ice gel Pack 0**°C** PCM. E.g:- IHS-0
3.	Flower Products ,F &V products	15°C to 25°C	Sinha Thermal energy ™ Ice gel Pack 15**°C** PCM E.g:- OM-15P
4.	Pharma Products like vaccine ,injections etc.	-25°C to -15°C	Sinha Thermal energy ™ -25**°C** PCM E.g:- IHS-25N
5.	Sea food, poultry,dairy	-5°C to +5°C	Sinha Thermal energy ™ -5**°C** PCM E.g:- IHS-5N

S.No.	Products	Temperature Range	Suitable Products
6.	Frozen food like chicken,egg,fish etc.	-30 °C to -20°C	Sinha Thermal energy ™ -30**°C** PCM E.g:- IHS-30N,IHS-33N.
7.	Ice cream,Sundae	-25 °C to -15°C	Sinha Thermal energy ™ -25**°C** PCM E.g:- IHS-25N,IHS-21N, IHS-18N.
8.	Ambient Temperature For Pharmaceuticals and Medicine.	About 25 °C	Sinha Thermal energy ™ 25**°C** PCM E.g:-OM-25P
9.	Building cooling	18 °C to 26°C	Sinha Thermal energy ™ 18**C** PCM,21**°C** PCM,25**°C** PCM , 26 **°C** PCM E.g:-OM-21P ,OM-25P,OM-26P

S.No.	Products	Temperature Range	Suitable Products
10.	Domestic hot water preheating	25 °C to 35°C	Sinha Thermal energy ™ 25° **C**,26**°C**,30**°C** PCM E.g:- OM-25P,OM-26P. ,OM-30P.
11.	Building heating	30 °C to 35°C	Sinha Thermal energy ™ 30° **C**,31**°C**,34**°C** PCM E.g:-IHS-30P,OM-31P,OM-34P.
12.	Solar heating	60 °C to 80°C	Sinha Thermal energy ™ 60° **C**,70**°C**,80**°C**PCM E.g:-OM-60P,OM-31P,OM-34P.
13.	Fruit And vegetable dryer	40 °C to 80°C	Sinha Thermal energy ™ 60° **C**,70**°C**,80**°C**PCM E.g:-OM-60P,OM-31P,OM-34

S.No.	Products	Temperature Range	Suitable Products
14.	Egg Incubation	30 °C to 35°C	Sinha Thermal energy ™ 30° **C**,31**°C**,34**°C** PCM E.g:-IHS-30P,OM-31P,OM-34P.
15.	Green House for Cold Climate	15°C to 18°C	Sinha Thermal energy ™ 30° **C**,31**°C**,34**°C** PCM E.g:-IHS-30P,OM-31P,OM-34P.
16.	Green House for Moderate climate	20°C to 24°C	Sinha Thermal energy ™ 30° **C**,31**°C**,34**°C** PCM E.g:-IHS-30P,OM-31P,OM-34P.
17.	Green House for Hot climate	26°C to 30°C	Sinha Thermal energy ™ 30° **C**,31**°C**,34**°C** PCM E.g:-IHS-30P,OM-31P,OM-34P.

PCM MATERIAL SINHA THERMAL ENERGY



ADVANCE SINHA THERMAL ENERGY PCM

- High latent heat of fusion
- Appropriate phase change temperature(PCT)
- Stable phase change over many cycles
- Small volume change during phase transition
- Chemically stable
- Non-corrosive
- Non-toxic and safe
- Low flammability
- Our PCMs Are Price Competitive
- Environmentally friendly

PCM VS GEL PACKS

Feature	PCM	Gel Pack
Precise temp control	✅ Yes	❌ No (less accurate)
Holds temp longer	✅ Yes	❌ Shorter duration
Reusable	✅ High	⚠️ Limited
Risk of freezing product	❌ Low	✅ High

PCM VS GEL PACKS

More Precise Temperature Control

- **PCMs are engineered to maintain specific temperatures**, such as 2–8°C, 15–25°C, or -20°C, by changing phase (solid ↔ liquid) at that exact point.
- **Gel packs** generally just cool down as they lose temperature — no precise "hold point" — making it harder to control the exact environment.

Longer Duration of Temperature Hold

- PCMs **absorb or release latent heat** at their phase change temperature, helping them **maintain that temperature longer**.
- Gel packs lose effectiveness faster because once their internal temperature rises, there's no phase change to absorb additional heat.

PCM VS GEL PACKS

Improved Product Safety

- PCMs reduce the risk of **temperature excursions** (i.e., going out of range), which is crucial for pharmaceuticals, vaccines, and perishables.
- Gel packs can accidentally **freeze sensitive products** if placed too close, especially if over-frozen beforehand.

Reusability and Sustainability

- Many PCMs are **reusable and durable**, with some designed for hundreds of cycles.
- Gel packs may leak, degrade, or require disposal after fewer uses.

PCM VS GEL PACKS

Customization & Versatility

- PCMs are available in a **wider range of phase temperatures**, making them better suited for different cold chain requirements (ultra-cold, refrigerated, CRT).
- Gel packs are typically limited to 0°C or below.

Temperature Fluctuation Bad for Products

Great question! Both **high and low temperatures** can negatively affect products, depending on what kind of products you're talking about. Here's a breakdown by temperature extremes and general product categories:

🥵 **High Temperatures – Why They're Bad:**

Food & Beverages:

- Can **spoil** faster due to bacterial growth.
- **Melt** products like chocolate or cheese.
- Can **alter taste, texture, and nutritional value**.

Pharmaceuticals:

- Many medicines are temperature-sensitive.
- Heat can **break down active ingredients**, making them less effective or unsafe.

Temperature Fluctuation Bad for Products

3. **Cosmetics & Skincare:**

- Heat can cause separation of ingredients.
- Creams might **melt or become runny**.
- Some preservatives become ineffective at high temps.

4. **Electronics:**

- Can **overheat and malfunction**.
- Battery life gets reduced.
- May cause **warping or damage** to internal components.

Temperature Fluctuation Bad for Products

🧊 **Low Temperatures – Why They're Bad:**

1. **Food:**
   - Some foods (like fruits and veggies) can get **freezer burn** or become **texturally damaged**.
   - Freezing can **alter taste or quality** if not intended.
2. **Pharmaceuticals:**
   - Some meds are damaged if they **freeze** (especially liquids or suspensions).
   - Can cause **crystallization** or changes in composition.
3. **Cosmetics:**
   - Freezing can cause separation of ingredients.
   - May change **texture or effectiveness** of the product.

Temperature Fluctuation Bad for Products

4.Electronics:

- Cold can cause **condensation** when brought back to warm temps, leading to **short-circuits**.
- Can affect **battery performance**.

🎯 **In General:**

- **Temperature extremes stress materials** — causing cracking, expansion, or contraction.
- **Packaging** might also get damaged or deformed.
- **Shelf life gets reduced** significantly.

PCM vs Dry Ice

Yes, Phase Change Materials (PCMs) offer several advantages over dry ice for temperature control in various applications, especially in cold chain logistics and thermal management:

Advantages of PCM over Dry Ice:

- Precise Temperature Control: PCMs are designed to maintain a specific temperature range during their phase transition (melting or freezing). This allows for much more precise temperature control compared to dry ice, which has a fixed sublimation temperature of -78.5°C (-109.3°F). PCMs can be formulated for a wide range of temperatures, ensuring that temperature-sensitive goods are kept within their optimal range (refrigerated, frozen, or even warmer if needed).
- Bidirectional Thermal Regulation: PCMs can absorb or release heat, effectively buffering temperature fluctuations in both directions (preventing contents from getting too hot or too cold). Dry ice only provides cooling.
- Reusability: PCMs can be refrozen or cooled down and reused multiple times, making them a more sustainable and cost-effective solution in the long run compared to dry ice, which sublimates and is consumed after a single use.

SINHA
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Key Recognition

Department of Science & Technology, Government of India
सत्यमेव जयते

MILLENNIUM ALLIANCE

World Health Organization

UNIDO

FICCI

birac
Ignite Innovate Incubate

COLD CHAIN
STRATEGY SUMMIT

Key Recognition

DSIR
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

MIT Technology Review
Innovators Under 35

CII
Confederation of Indian Industry

(Amended)

Government of India

Form GST REG-06

(See Rule 10(1))

Registration Certificate

Registration Number : 27AADCF7558C1ZL

1.	**Legal Name**	SINHA THERMAL ENERGY PRIVATE LIMITED			
2.	**Trade Name, if any**	SINHA THERMAL ENERGY PRIVATE LIMITED			
3.	**Additional trade names, if any**				
4.	**Constitution of Business**	Private Limited Company			
5.	**Address of Principal Place of Business**	**Building No./Flat No.:** Ground Floor **Road/Street:** Malang Road **Nearby Landmark:** Near Sun Starlit **Locality/Sub Locality:** Mangrul Village, Taluka- Ambarnath **City/Town/Village:** Kalyan **District:** Thane **State:** Maharashtra **PIN Code:** 421306			
6.	**Date of Liability**				
7.	**Date of Validity**	From	30/05/2024	To	Not Applicable
8.	**Type of Registration**	Regular			
9.	**Particulars of Approving**				

Signature

Signature Not Verified

Name	
Designation	
Jurisdictional Office	
Date of issue of Certificate	25/02/2025

Note: The registration certificate is required to be prominently displayed at all places of Business/Office(s) in the State.

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of application on 25/02/2025 .

Annexure A

Goods and Services Tax Identification Number: 27AADCF7558C1ZL

Details of Additional Place of Business(s)

Legal Name	SINHA THERMAL ENERGY PRIVATE LIMITED
Trade Name, if any	SINHA THERMAL ENERGY PRIVATE LIMITED
Additional trade names, if any	

Total Number of Additional Places of Business(s) in the State 0

SINHA
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Annexure B

Goods and Services Tax Identification Number: 27AADCF7558C1ZL

Legal Name	SINHA THERMAL ENERGY PRIVATE LIMTED
Trade Name, if any	SINHA THERMAL ENERGY PRIVATE LIMTED
Additional trade names, if any	

Details of Managing / Whole-time Directors and Key Managerial Persons

1

Name	ROHIT KUMAR SINHA
Designation/Status	DIRECTOR
Resident of State	Bihar

2

Name	SABITA KUMARI
Designation/Status	DIRECTOR
Resident of State	Bihar

Sinha Thermal Energy Shop and Establishment

महाराष्ट्र दुकाने व आस्थापना (नोकरीचे व सेवाशर्तीचे विनियमन) नियम, २०१८

सूचना दिल्याबाबत पावती

SINHA THERMAL ENERGY PRIVATE LIMITED

MANUFACTURER OF ICE GEL PACK

ठिकाण : Thane

Sinha Thermal Energy Shop and Establishment

अनुक्रमांक	लाइसेन्सधारी का नाम	प्रतिष्ठान का नाम	लाइसेन्स क्रमांक	लाइसेन्स अवधि	ई-मेल
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SINHA
THERMAL ENERGY
THERMAL ENERGY SOLUTION

MANAGEMENT SYSTEM CERTIFICATE

VERIFIED
www.royalapl.com

This is to certify that

SINHA THERMAL ENERGY PRIVATE LIMITED

1034, GROUND FLOOR, MALANG ROAD, NEAR BUS STAND, MANGRUL VILLAGE,
AMBARNATH, THANE - 421506, MAHARASHTRA, INDIA.

has been assessed by RAPL and found to comply with the requirements of

ISO 9001 : 2015
Quality Management Systems

For the following activities:

MANUFACTURING COLD CHAIN PACKING TECHNOLOGY, PHASE CHANGE MATERIAL TECHNOLOGY, REDUCING CARBON EMISSION BY TOTAL ENERGY STORAGE SOLUTIONS, PHASE CHANGE MATERIAL, ICE GEL PACK, COLD CHAIN PACKING INSULATED BOXES AND BAGS.

Certificate Number: E20250523078
Date of certification: 13/05/2025
Ist Surveillance on or before: 12/05/2026
IInd Surveillance on or before: 12/05/2027
Certification Valid Until: 12/05/2028

IAF
EGAC
Accredited
QMS Certification CAB# 119012

Director (Certification)
Royal Assessments Pvt. Ltd.

623-A, Tower-B, iThum, Plot No. A - 40, Sector - 62, Noida 201301, India.
www.royalapl.com, info@royalapl.com
Phone : +91 120 4251329
This Certificate can be verified at www.ahuntsearch.org

This Certificate is an endorsement of certified client's certification status but remains the property of Royal Assessments Pvt. Ltd. Certificate must be returned on RAPL's request or if certificate is withdrawn. Validity of certificate is subject to successful completion of surveillance audits. RAPL is accredited by EGAC, Egypt. EGAC is member of International Accreditation Forum (IAF) and signatory of MLA.

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THANK YOU